A Diagnostic Technique for inspection of pipes in CVD system

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A method using ultrasound for detecting the presence of particles on insides pipes in CVD (Chemical Vapor Deposition) system is described. The particle deposits insides pipes of CVD system is a serious problem which can reduce the gas flow rate or damage pumps by sticking to rotors of pump. Therefore, the identification of particle deposits, which will reduce maintenance cost by minimizing unnecessary pipe replacements and equipment shutdown for inspection, is required for the maintenance of CVD equipment. For identification of particle deposits insides pipes. essentially, transmitting and receiving sensors are included in one package which is placed in contact with the outer wall of pipe. When particles coat on the inner surface of pipe, little sound is reflected from the interface and a large fraction is transmitted into the particles layer and is absorbed therein. This dramatically affects the pipe resonance and the amplitude is reduced sharply. By monitoring the decrease in amplitude, it is possible to detect the presence of particle or any other deposition on insides of pipe. The prototype sensors developed in this study are expected to be used successfully in semiconductor fabrication.